# Your response

| Question | Your response |
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| **Question 1. How do you think demand for Shared Access is likely to change in future and why; Which use cases do you think are likely to emerge or grow, and which decline?** Please provide a view on the bandwidth you would consider the minimum and optimal requirement for growth use cases, and timelines you would expect for their development | Confidential? – N<br><br>The Dynamic Spectrum Alliance (DSA)[1] respectfully submits these comments in response to Ofcom's "Call for input: Evolution of the shared access licence framework" (Call for Input).<br><br>The DSA shares Ofcom's goals of ensuring efficient assignment and use of scarce radio frequencies while making spectrum available for new wireless services to facilitate competition, enhance connectivity, and promote investment.<br><br>The DSA believes that providing additional spectrum access options through use of new spectrum management tools, such as Dynamic Spectrum Management Systems (DSMS) (also known as dynamic spectrum access systems), will help meet future connectivity demands, benefit competition, create conditions for innovation, and spur more rapid deployments of wireless networks and services.<br><br>We commend Ofcom for its visionary Shared Access Licensing framework, which is giving new users localised access to spectrum bands to meet their emerging business needs as well as improving connectivity for consumers.<br><br>This framework is an excellent first step in the process of increasing spectrum access for a wide range of new users. We agree with Ofcom, however, that it will be important to take the next step by leveraging commercially available |

[1] The DSA is a global, cross-industry, not for profit organization advocating for laws, regulations, and economic best practices that will lead to more efficient utilization of spectrum, fostering innovation and affordable connectivity for all. Our membership spans multinationals, small-and medium-sized enterprises, as well as academic, research and other organizations from around the world all working to create innovative solutions that will benefit consumers and businesses alike by making spectrum abundant through dynamic spectrum sharing. A full list of DSA members is available on the DSA's website at www.dynamicspectrumalliance.org/members

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| | automated shared access technology and tools to further streamline and enhance users' experience with the Shared Access Licensing process.<br><br>The DSA anticipates that demand for streamlined, low-cost Shared Access will continue to grow. We call to Ofcom's attention the recent report issued by the U.S. Institute for Telecommunication Science (ITS), entitled "An Analysis of Aggregate CBRS SAS Data from April 2021 to January 2023," available at https://its.ntia.gov/about-its/archive/2023/new-first-of-its-kind-report-provides-analysis-of-early-cbrs-deployment-data.<br><br>This report shows that growth of shared access in the 3.5 GHz Citizens Broadband Radio Service (CBRS) has been strong, with a "mean quarterly increase of 12.0% and a total increase of 121% over the 21-month analysis period." ITS notes that the majority of these deployments use spectrum in the licensed-by-rule General Authorized Access (GAA) tier, which does not require a user to apply for a license, but only to use certified equipment and to receive a spectrum assignment by one of the Spectrum Access System (SAS) administrators. The SAS administrators use DSMS technology to manage spectrum assignments for over 330,000 base stations, deployed by both 228 Priority Access License (PAL) holders and more than 1200 GAA operators, while protecting incumbent operations from interference.<br><br>Much of this deployment has been driven by enterprises for private wireless use cases, including utilities, retail, smart agriculture, smart warehousing, smart manufacturing, schools, healthcare institutions, etc.<br><br>The use of automation, cloud-computing, and machine learning to increase spectrum efficiency and facilitate low-cost, ready access has directly contributed to the considerable growth of these private wireless networks. Applying cloud-computing capabilities to spectrum management |

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| | also enables more predictable quality of service, better congestion avoidance, and improved coordination.<br><br>The DSA anticipates ongoing, and likely increased, demand for streamlined, low-cost access to spectrum via innovative shared licensing frameworks. We encourage Ofcom to expand upon its Shared Access Licensing framework and to implement automated capabilities as soon as practicable. |
| **Question 2. Are there elements of the current framework that complicate the use of Shared Access licences for specific use cases?** If so, please provide specific examples and indicate the changes that would be required to facilitate this and how this might co-exist with other use cases. | Confidential? – N<br><br>As Ofcom notes in the Call for Input, there are opportunities to create a "better user experience and significantly reduce the time taken to access spectrum" under the Shared Access Licensing framework. Automation of the licensing process will provide prospective users with the ability to identify quickly and with greater certainty where spectrum resources are available that meet their needs and will enable them to complete the licensing process on a near real-time basis for the duration and location of their choosing.<br><br>Automated DSMS tools will also assist Ofcom to make more efficient use of spectrum by making more realistic assumptions, which will lead to greater opportunities for co-existence amongst users. Using real-world data collected by DSMS tools directly from licensees' radio equipment to help identify/resolve causes of interference could be useful and improve the efficiency of assignments. Such real-world system parameters and performance metrics could also be used to develop and refine more efficient and effective spectrum management algorithms going forward.<br><br>The DSA recommends that Ofcom consider opportunities for increasing sharing within the same geographic area, such as between indoor and outdoor use cases, rather than authorizing only a single licensee at a time in a particular |

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| | geographic area and frequency range. We also recommend the use of operational data, such as antenna orientation, to make more realistic assumptions about the potential for interference amongst users. Finally, we recommend that Ofcom create incentives for Shared Access licensees to coordinate amongst each other and improve co-existence rather than setting and enforcing on its own bright-line limitations, which again may be overly conservative.<br><br>In addition, the DSA recommends that Ofcom permit that Shared Access spectrum to be used to support "Neutral Host" services. The current Shared Access license guidelines stipulate in ¶1.12 that, "[i]t is not permitted to use the 3.8-4.2 GHz band to provide national mobile broadband services." The DSA notes that Neutral Host Networking is an important, emerging use case for shared and/or local licenses. For instance, at Mobile World Congress Barcelona this year, Meta, AT&T, T-Mobile, and Verizon announced that Meta's corporate facilities in the United States would leverage their in-building private cellular deployments on CBRS spectrum to provide neutral-host services for the subscribers of the 3 Tier 1 Mobile Network Operators (MNOs). https://ongoalliance.org/5-bars-indoor-for-everyonethe-power-of-cbrs-and-neutral-hosts-in-wireless-networks/. Federated Wireless also recently announced a neutral host service offering using CBRS shared spectrum. https://www.rcrwireless.com/20230511/private-5g/federated-wireless-pushes-cbrs-neutral-host-model-for-us-operators. Given this growing use case, the DSA urges Ofcom to explicitly permit neutral-host use cases for enterprises, communities, industrial entities, etc. that wish to deploy a private network using Shared Access spectrum and leverage that same network to provide improved connectivity for public mobile broadband subscribers. |
| **Question 3. Do you have any comments on the power restrictions currently in place, particularly in urban/high density** | Confidential? – N |

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| **areas, under the Shared Access licence?** Please explain what benefits could be delivered using a higher operating power (e.g. medium power in urban areas), or any concerns you sharing with such operations). | Increasing shared access power levels in densely populated areas will likely result in a reduction in spectrum availability for multiple users. |
| **Question 4. Do you have any comments on the exceptions process, and how some of its benefits could be maintained within more standardised and automated assessments?** | Confidential? – N<br><br>As mentioned above, by implementing automated DSMS technology and incentivizing shared access licensees to work together to improve co-existence, Ofcom may be able to accommodate more exceptions or otherwise relax some of its more conservative requirements, ultimately leading to more efficient use. |
| **Question 5. Do you have any views whether and how the coordination approach should be modified? If yes, please provide comments in light of the issues set out above.** | Confidential? – N<br><br>Please see the responses to Questions 3-4 above. |
| **Question 6. Do you have views on whether newer or emerging technologies can support coexistence between additional users in the band, and if so, how?** | Confidential? – N<br><br>Advances in automation, cloud-computing, and machine learning are continually being made, which will greatly improve sharing and coexistence opportunities. Other technology advances, including advanced antenna systems and active RAN capabilities, will also contribute to greater opportunities for coexistence.<br><br>Automation of the licensing process will provide prospective users with the ability to identify quickly and with greater certainty where spectrum resources are available that meet their needs and will enable them to complete the licensing process in near real-time. |
| **Question 7. Please outline any comments on the current licensing process (e.g. ease of application, time taken, the information we require).** If relevant, please note aspects you are currently content with and areas which could be improved. | Confidential? – N<br><br>As described above, the DSA encourages Ofcom to implement automated spectrum access tools as soon as practicable to provide prospective Shared Access users with the ability to identify quickly and with greater certainty where |

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| | spectrum resources are available that meet their needs and will enable them to complete the licensing process in near real-time. In addition, the automation of the Shared Access Licensing process will support machine-to-machine interfaces that are becoming a greater part of "private 5G in a box" offerings. |
| **Question 8. Do you have any comments on the suitability of available spectrum for your use cases?** Please consider the relevance of the additional bands we are proposing for the framework, and the impact of any limitations on existing bands. | Confidential? – N<br><br>The DSA recommends that Ofcom consider adding frequency bands to its Shared Access Licensing framework where there is an existing or growing international harmonization of technology and equipment, which will facilitate the introduction of a variety of new services. |
| **Question 9. Do you have any comments on equipment availability limiting deployment options in 3.8-4.2 GHz?** Please comment on the impact of any experiences you have had, and where relevant, your expectations for when more equipment will be broadly available across the band. | Confidential? – N<br><br>The DSA anticipates the equipment ecosystem for the 3.8-4.2 GHz band will expand as more countries, including the United States and Norway, deploy networks in the band. Several other countries, including Saudi Arabia and the UAE, have consulted on issuing local/light licenses in the band, and other countries such as France and Croatia have indicated that they are eager to offer experimental licensed for localized/private use cases. In addition, the work that CEPT is doing to explore the use of DSMS solutions to enable efficient sharing of the 3.8-4.2 GHz band with incumbent systems will also lead to an increase in equipment availability. |
| **Question 10. Do you have any other general comments on the Shared Access framework?** Please consider any areas where future innovations could further support Ofcom's policy objectives for this spectrum, and/or improve the experience for users. | Confidential? – N<br><br>As mentioned above, the DSA commends Ofcom for its visionary Shared Access Licensing framework, which is giving new users localised access to spectrum bands to meet their emerging business needs as well as improving connectivity for consumers. We believe it will be important to implement commercially available automated shared access technology and tools to further streamline and enhance users' |

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| | experience with the Shared Access Licensing process. |